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ABSTRACT

The effects of a learner-centered approach on self-regulated learning were studied, and a cluster analysis was used to categorize students based on their goal orientation and to relate goal orientation to the self-regulated learning strategies used by the learner. Participants were 114 sixth and seventh graders from 2 multiage classrooms in an urban middle-class school that espoused a learner-centered approach to education. The study used a variety of methods, including the Self-Regulated Learning Interview Schedule and the Patterns of Adaptive Learning Survey, to elucidate the self-regulated learning strategies and achievement goal orientations of these students. The self-regulated learning strategies used most often were seeking, organizing, and transforming information, seeking social assistance from teachers, and goal-setting and planning. Less often used were rehearsing and memorizing, self-evaluation, and record-keeping and monitoring. With regard to achievement goal orientation, these students were most oriented toward developing new skills, the intrinsic value of learning, developing their understanding, and improvement. Findings suggest that self-regulated learning strategy use may be affected by motivation goal orientation. Also, some differences were noted between the two classes with respect to task orientation. (Contains 1 table and 20 references.) (SLD)

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Self-Regulated Learning Strategies Used by the Learners in a Learner-Centered School

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Theoretical framework

Self-Regulated Learning

The self-regulated learner has been defined as a learner who is a strategically, metacognitively, and motivationally active participant in his/her learning (e.g., Zimmerman, 1986). Skillful self-regulated learners attribute their successes or failures to effective or ineffective strategy use, respectively (Zimmerman & Kitsantas, 1997). These learners tend to use effective self-evaluation and monitoring. Motivationally, skillful self-regulated learners tend to have a learning or mastery goal orientation (Pintrich & DeGroot, 1990); tend to perceive themselves as self-efficacious (Schunk, 1984), and report significantly higher intrinsic interest (Pintrich & De Groot, 1990).

Using the Self-Regulated Learning Interview Schedule (SRLIS; Zimmerman & Martinez-Pons, 1986), Zimmerman and Martinez-Pons' (1986) demonstrated that 10th grade students in a high achievement track demonstrated a significantly greater use of thirteen out of fourteen self-regulation strategies than students in a low achievement track. Using an adapted version of the Self-Regulated Learning Interview Schedule (SRLIS; Zimmerman & Martinez-Pons, 1986); Zimmerman and Martinez-Pons (1990) administered the instrument to both regular and gifted students in the 5th, 8th and 11th grades. Results indicated that the gifted students displayed significantly higher self-regulated learning strategy use than regular students. There was also a developmental

trend in the self-regulated learning strategies used, as 11th graders surpassed 8th graders, who in turn surpassed 5th graders.

A variety of effective methods have been proposed and implemented as a means of promoting self-regulated learning such as strategy interventions, practice, feedback, monitoring, and scaffolding (Schunk & Zimmerman, 1998). Further, Schunk and Zimmerman (1998) assert that "although research on self-regulated learning in naturalistic contexts is limited to date, it is unlikely that this capability emerges directly from formal instruction." Hence, one purpose of the present paper is to elucidate the effects of participating in a learner-centered environment on the self-regulated learning strategies that are used by the learners in the naturalistic contexts of two classrooms in a learner-centered school.

Goal Orientation Theory of Motivation

Recently, there has been an increasing emphasis placed on goal orientation as a factor that is critical to learning and achievement. Goal orientation theory focuses on the learners' purposes for achievement behavior. For example, when students have a task goal orientation, they see mastering the material as their primary goal. When students have a performance-approach goal orientation, they see demonstrating their ability to others as their primary goal. Finally, when students have a performance-avoid goal orientation, they see avoiding the demonstration of incompetence as their primary goal (e.g., Middleton & Midgley, 1997; Midgely, Maehr, Hicks, Roeser, Urdan, Anderman, Kaplan, Arunkumar, Middleton, 1997).

In one study for example, Wolters, Yu, and Pintrich (1996) administered the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich and DeGroot, 1990) and the Patterns of Adaptive Learning Survey (PALS; Midgley, Maehr, Hicks, Roeser, Urdan, Anderman, & Kaplan, 1996) to 7th and 8th grade students. The results indicated that adopting a learning goal orientation and a relative ability goal orientation resulted in a generally positive pattern of motivational beliefs including task value, and self-efficacy, as well as higher levels of cognitive strategy use, self-regulation and academic performance.

Middleton and Midgley (1997) administered the Patterns of Adaptive Learning Survey (PALS; Midgley, Maehr, Hicks, Roeser, Urdan, Anderman, & Kaplan, 1996) as well as a scale used to measure self-regulated learning adapted from measures developed by Zimmerman and Martinez-Pons (1986), and Pintrich, Smith, Garcia, and McKeachie, (1991). They found that a task goal orientation predicted academic efficacy and self-regulated learning, and lower levels of avoiding help-seeking. Middleton and Midgley (1997) concluded that there is a need for future studies to consider the relationship between the learning environment and these goal orientations, as well as to investigate these patterns and interactions among these three goal orientations in relation to educationally relevant outcomes.

Meece and Holt (1993) used a hierarchical cluster analysis in an effort to identify 5th and 6th grade students on the basis of their mastery, ego and work-avoidant goal orientations. These three goal types are theoretically similar to the aforementioned task goal, performance-approach goal and performance-avoid goal orientations. The cluster

analysis identified three goal patterns that were labeled as high mastery, combined mastery-ego, and low mastery-ego.

In a study by Ablard and Lipschultz (1998), 7th grade high-achieving students described their use of self-regulated learning strategies using a paper-and-pencil version of the Self-Regulated Learning Interview Schedule (SRLIS; Zimmerman & Martinez-Pons, 1986), and rated their achievement goals (mastery and performance) using the Patterns of Adaptive Learning Survey (PALS; Midgley, Maehr, & Urdan, 1995). Results of the study indicated that the total self-regulated learning score was significantly related to achievement goal group. More specifically, students with low performance and low mastery goals had significantly lower total self-regulated learning scores than students with high mastery and low performance goals as well as students with both high mastery and high performance goals.

Also using a cluster analysis, Turner, Thorpe, and Meyer (1998) demonstrated four clusters comprised of students' self-reported goals, affect, and self-regulatory beliefs and behaviors. Cluster 1 students were classified as learning oriented and demonstrated the highest learning goal focus and the lowest ability goal focus as well as the highest scores for deep strategy use, preference for difficulty, taking action, and adaptive self-efficacy. Cluster 2 students were classified as success oriented and demonstrated an approach to learning that was more influenced by an ego focus. Cluster 3 students were classified as uncommitted, and had neither learning or ability goals. Cluster 4 students were classified as avoidant, and had the lowest learning goals as well as the highest ability goals. These students in Cluster 4 also had the lowest self-efficacy, and the lowest

reported use of learning strategies. Results of path anlayses indicated that negative affect after failure mediated performance goals and self-regulatory beliefs and behaviors.

In conclusion, while the present study seeks to investigate the effects of a learner-centered approach on self-regulated learning, relatively recent research in the area of motivation demonstrates that self-regulated learning may be mediated by achievement goal orientation. Hence, in this present study, a cluster analysis is used to categorize students based on their goal orientation, and to further relate this goal orientation to the self-regulated learning strategies used by the learner.

The Learning Context

The Learner-Centered Principles (1993) represent twelve principles organized around cognitive and metacognitive factors, motivational and affective factors, developmental factors, social factors, and individual difference factors that are central to learning (e.g., Fasko, Grubb, Jesse, and McCombs, 1997; Lambert & McCombs, 1998). A synthesis of a large body of research underlying these factors specifies that: learning is an active process of constructing new knowledge, learners learn best through the application of prior knowledge; learners learn best when they are intrinsically motivated, self-efficacious, and pursue learning or mastery goals, and when learning takes place in authentic tasks; that there are both universal aspects of development through which all learners must pass, as well as factors that are unique to each individual such as cultural and environmental factors; that learning occurs through collaboration with others in a

social context, and an accepting, supportive learning environment fosters learning (e.g., Alexander & Murphy, 1998).

Celebration School as and Example of a Learner-Centered School

At the time the present study was conducted, the philosophy and best practices implemented at Celebration School in Celebration, Florida espoused a learner-centered approach education. For example, in its first year, Celebration School implemented multi-age open classrooms, integrated instruction, an emphasis on cooperative learning, personalized learning plans, and authentic assessment as embodiments of a learner-centered approach that guided the initial development of the school (Sanders, Akey, Boyd, Kamen, Salisbury-Glennon, and Gorrell, in progress).

The emphasis on student goals and effectively meeting these goals at Celebration School is intended to foster a variety of cognitive and metacognitive strategies. Additionally, the emphasis on project-based learning and assessment though student portfolios may serve to foster motivation. Further, the various principles implicit in these learner-centered principles may interact in a synergistic manner, thus creating complex interactions between the cognitive, metacognitive and motivational strategies used by the learners. Hence, the present study sought to investigate the effects of this learner-centered approach on the self-regulation and motivation used by the learners, as well as the complex interrelationships between self-regulated learning and motivation.

Research on achievement goal orientation has demonstrated that the nature of the classroom and the school environment can encourage the adoption of different goal orientations. For example, Ames (1992) identified aspects of the following variables as being critical to creating a mastery goal orientation in the classroom: tasks, evaluation

and recognition, and authority. Her research asserts that to effectively foster a mastery goal orientation in the classroom, the classroom context should foster interesting, engaging, challenging and meaningful tasks; an authority structure that emphasizes choice, responsibility and independence; as well as evaluation that focuses on improvement, effort and progress. Hence, the final purpose of the present investigation was to provide an investigation into the effects of the classroom learning context on the self-regulated learning strategies and the achievement goal orientation of the learners.

Hence, this study addressed the following specific questions:

1) Does a learner-centered approach to learning and instruction foster the use of self-regulated learning strategies? If so, what self-regulated learning strategies are used?

2) Does achievement goal orientation affect self-regulated learning?

3) Does the classroom context affect achievement goal orientation and/or self-regulated learning?

Method

Subjects

114 sixth and seventh grade students from two multi-age classrooms participated in the study. The students were predominantly middle class and from a large-city school district in central Florida representing a fairly diverse population.

Measures

The Self-Regulated Learning Interview Schedule (SRLIS). As in other studies (e.g., Purdie, Hattie, & Douglas, 1996; Ablard & Lipschultz, 1998), a modified version of the paper-and-pencil version of the Self-Regulated Learning Interview Schedule (SRLIS; Zimmerman & Martinez-Pons, 1986) was adapted for the present study. For example, at Celebration School, tests are not the focus of assessment, as portfolios are generally used to assess students' progress. Hence some learning contexts on the original instrument such as preparing for and taking a test were eliminated. Additionally, in the present study, some contexts that were more applicable to the learning context at Celebration School were added. These more applicable contexts were constructed as the result of pilot interviews conducted one month prior to the actual study with randomly selected students.

This adapted version of the SRLIS provided learners with the following 7 contexts relevant to the Celebration School; writing your daily goals[1], deciding if you are making good progress toward your daily goals [1], completing your math assignments [2], working on a difficult math assignment when you need help [2], completing your math assignment when there are more interesting things that you would rather do [2], writing a

research paper [2], and preparing your portfolio for portfolio night [1]. Contexts with a superscript of 1 indicate contexts that are specific to Celebration School, contexts with a superscript of 2 indicate contexts that were adapted from Zimmerman & Martinez-Pons (1990). Students were asked to list the strategies they used in each context, and then to rate the degree to which they used each strategy (seldom, occasionally, frequently, most of the time) using a scale of 1-4.

Scoring

The students' open-ended responses were then coded according to the 14 types of self-regulated learning strategies proposed by Zimmerman and Martinez-Pons (1986). In the Zimmerman and Martinez-Pons (1986) study, three methods of scoring were used: strategy usage, strategy frequency, and strategy consistency. In the strategy consistency scoring method, each method mentioned was weighted by the student's estimate of the strategy frequency use. For each mention of the strategy, the following weights were given on the basis of the rated consistency: seldom =1, occasionally = 2, frequently = 3, most of the time = 4. Since Zimmerman and Martinez-Pons (1986) concluded that this strategy consistency measure was the most effective, this method of scoring was used in the majority of the analyses in the present study.

In the present study, in the analysis in which the clusters were used to predict the self-regulated learning strategies used by the learners, a different scoring technique was used. In this analysis, a scoring technique that combined both the consistency of the strategy and the frequency of the strategy was used. In this case, it was believed by the authors that the strategy consistency score did not completely represent the frequency with which each strategy was used. For example if subject # 1 used the strategy of self-

evaluation 6 times, and indicated a score of 3 for each time it was used, using the strategy consistency method, subject # 1 would get a mean score of 3 for the strategy of self-evaluation. If subject # 2 used the strategy of self-evaluation only 1 time, and indicated a score of 3 for that one time, that subject would also get a mean score of 3. Therefor, in the present study the weighted scores were summed for each subject in the analyses using the cluster analysis. So, in this case, subject # 1 would have a score of 18 for self-evaluation, subject # 2 would have a score of 3. (This is probably an extreme example, as a number as high as 18 rarely occurred in this sample).

The Patterns of Adaptive Learning Survey (PALS). The Patterns of Adaptive Learning Survey (PALS; Midgley, Maehr, Hicks, Roeser, Urdan, Anderman, Kaplan, Arunkumar, Middleton, 1997) was also administered directly following the Self-Regulated Learning Interview Schedule (SRLIS). This survey consists of 42 questions to which students responded using a 5-point scale (1= not at all true to 5= very true). These scales have proven to be reliable and valid in a number of studies (e.g., Midgley, Maehr, Hicks, Roeser, Urdan, Anderman, & Kaplan, 1996). These 42 questions make up the following scales: task goal orientation, performance-approach goal orientation, performance-avoid goal orientation, task goal structure, performance goal structure, academic efficacy, academic self-handicapping.

Classroom Observations and Coding

The two classrooms from which the data was collected were observed by the experimenter over a period of ten class days. During this time, the experimenter took classroom observation notes in an effort to shed light on the classroom context and more

specifically, the actions of the teachers in the classroom context. These classroom observation notes were taken during math class in both classrooms.

Using Ames' (1992) TARGET model as a framework, these classroom observation notes were later classified into the categories of: task, authority, recognition, grouping, evaluation, and time. More specifically, the teachers' comments and the teachers' interactions with students were classified using this TARGET model. For example, the following were examples of teacher quotes that were classified as being representative of authority:

Classroom A

Teacher: ""Victor, don't give me that first grade stuff."

Classroom B

Teacher: (in response to a quarrel between two girls) " Each of you write down in your own words what was going on when I walked [over]… in your own words."

Results

Self-Regulated Learning Strategies

Our first research question asked: Does a learner-centered approach to learning and instruction foster the use of self-regulated learning strategies? If so, what self-regulated learning strategies are used?

Table 1

Mean Self-Regulated Learning Strategy Scores

Strategy	Mean	Standard Deviation
Organizing and transforming	2.44	1.63
Seeking social assistance from teachers	2.39	1.53
Goal-setting and planning	2.32	1.56
Seeking information	1.81	1.71
Self-consequences	1.75	1.70
Seeking social assistance from peers	1.40	1.52
Self-evaluation	1.26	1.54
Seeking social assistance from adults	0.88	1.45
Environmental structuring	0.80	1.36
Keeping records and monitoring	0.63	1.38
Reviewing records	0.41	1.08
Other	0.12	0.57

Rehearsing and memorizing	0.01	0.46

Students indicated the most frequent use of the self-regulated learning strategies of : organizing and transforming information, seeking social assistance from the teacher and goal setting and planning, respectively; and the least frequent use of the self-regulated learning strategies of: rehearsing and memorizing, reviewing records, keeping records and monitoring.

Achievement goal orientation. Results of the analysis using the data from the PALS indicated that with regards to goal orientation, overall, students obtained a mean task goal orientation score of 3.61, a mean performance-approach goal orientation score of 3.30 and a mean performance-avoid goal orientation score of 2.56. With regards to academic efficacy, students at Celebration School obtained a mean score of 3.89, and with regards to academic self-handicapping, students at Celebration School obtained a mean score of 1.73. Finally, students at Celebration School obtained a mean score of 4.10 for task goal structure, and a mean of 1.63 for performance goal structure.

The Effects of Motivational Goal Orientation on Self-Regulated Learning.

Our second research question asked: Does motivation goal orientation affect the use of self-regulated learning strategies? Results of a K-means cluster analysis based on the variables of task, performance-approach, and performance-avoid goal orientations, as well as task goal and performance goal structures, and the variables of academic efficacy and self-handicapping strategies yielded four clusters.

A closer inspection of these four clusters revealed that cluster 1 demonstrated the highest task goal orientation, the lowest performance-avoid goal orientation, a self-efficacy score that tied for the highest, a self-handicapping score that tied for the lowest,

the highest perceived task structure, and the lowest perceived performance structure. These students falling into this cluster were classified as the "learning oriented students" a classification used to describe a similar group of students in Turner, Thorpe, and Meyer (1998).

Cluster 2 demonstrated the highest levels of performance-approach goal orientation, and also the highest use of self-handicapping. These students were classified as the "performance oriented self-handicappers." Cluster 3 demonstrated a relatively equal and overall low use of all three goal orientations, and the lowest self-efficacy. These students falling into this cluster were classified as "undifferentiated" because they didn't seem to have any particular goal orientation. A cluster of students with a similar goal orientation was originally classified as "uncommitted" by Turner, Thorpe, and Meyer (1998).

Finally, cluster 4 demonstrated the lowest task goal orientation, the highest performance-avoid goal orientation, and while not the highest, a relatively high performance-approach goal orientation. These students were classified as the "performance-avoiders". In the Celebration School sample, 29% of the subjects made up Cluster1, 23% of the subjects made up Cluster 2, 27% of the subjects made up Cluster 3, and 21% of the subjects made up Cluster 4.

The effects of achievement goal orientation on self-regulated learning.

The results of a series of one-way analyses of variances indicated that cluster membership was a significant predictor of the following self-regulated learning strategies as reported on the self-regulated learning interview schedule (SRLIS; Zimmerman & Martinez-Pons, 1986): self-evaluation, $F(1, 44) = 4.11$, $p < .05$, record keeping and

monitoring, $F(1,18) = 4.71$, $p < .05$, environmental structuring, $F(1,25) = 5.46$, $p < .05$, and seeking assistance from the teachers, $F(1, 76) = 8.74$, $p < .05$.

Self-Regulated Learning as a Function of the Classroom Context

Our third research question asked: Does the classroom context mediate goal orientation and/or self-regulated learning? Results of an analysis of classroom observation notes indicated that overall, the teachers in classroom B implemented a more task goal orientation to learning and instruction, while the teachers in classroom A implemented a more performance-approach goal orientation to learning and instruction, as indicated through their tasks, authority and evaluation and recognition (see Method section for a more detailed explanation).

The results of a series of one way analyses of variance indicated that the learners in classroom B, the classroom classified as implementing more of a task goal orientation, demonstrated a significantly higher frequency of the self-regulated learning strategies of goal-setting and planning, $F(1,113) = 13.18$, $p < .01$, self-evaluation, $F(1,113) = 19.04$, $p < .01$, and seeking social assistance from adults $F(1,113) = 4.75$, $p < .05$. Further, results of the PALS indicated that the students in this classroom, Classroom B, demonstrated a significantly lower performance-approach goal orientation than the learners in classroom A, $F(1,115) = 7.2$, $P < .01$.

With regards to the cluster analysis, of the students in classroom B, the classroom classified as implementing more of a task goal orientation, 30% of the classroom was in Cluster 1, 16% of this classroom was in Cluster 2, 35% of the classroom was in Cluster 3, and 19% of the classroom was in Cluster 4. In light of the cluster classifications made by the experimenter, this indicates that in classroom B, 30% of the students were classified

as learning oriented, 16% were classified as performance-oriented self-handicappers, 35% were classified as undifferentiated, and 19% were classified as performance avoiders.

In classroom A, the classroom classified as implementing more of a performance-approach goal orientation, 27% of the classroom was in Cluster 1, 31 % of the classroom was in Cluster 2, 19% of the classroom was in Cluster 3, and 23% of the classroom was in Cluster 4. In light of the cluster classifications made by the experimenter, this indicates that in classroom A, 27% of the students were classified as learning oriented, 31% were classified as performance oriented self-handicappers, 19% were classified as undifferentiated, and 23% were classified as performance avoiders.

Discussion

Self-Regulated Learning

The present study used a variety of research methods in an effort to elucidate the self-regulated learning strategies and achievement goal orientations used by the learners in this learner-centered context. Our first question asked: Does a learner-centered approach to learning and instruction foster the use of self-regulated learning strategies?

The present study demonstrated that the learners in this study demonstrated the highest use of the self-regulated learning strategies of organizing and transforming, seeking social assistance from teachers, goal-setting and planning, and seeking information, respectively. Additionally, these students indicated significantly less use of the self-regulated learning strategies of rehearsing and memorizing, self-evaluation, and record keeping and monitoring than the sample.

These findings are in line with the task demands at Celebration School, as the project-based, theme oriented curriculum at Celebration requires the students to seek, gather and organize relevant information rather than to rely on a general textbook; the teachers generally serve as a guides or facilitators rather than as information dispensers, and the students at Celebration are expected to write daily, weekly, three-week or yearly goals (dependent upon their developmental level) to guide their learning rather than depend on a whole-class assigned task. Further, the learner-centered context at Celebration School does not emphasize lecture as a means of instruction, nor does it rely on tests as the primary means of assessment.

Achievement Goal Orientation

Our second question asked: Does motivation goal orientation affect self-regulated learning? Overall, the learners at Celebration School indicated the highest use of the achievement goal orientation of a task goal orientation, the second highest use of a performance-approach goal orientation and the lowest use of a performance-avoid goal orientation. This indicates that overall, the students in the two classrooms investigated were most oriented toward developing new skills, the intrinsic value of learning, developing their understanding, and improvement (Ames, 1992), indicative of a mastery task or mastery goal orientation (e.g., Middleton & Midgley, 1997; Ames, 1992). In contrast, students in this sample were least oriented toward doing better than others and performing, or avoiding work for self-protective reasons, indicative of a performance-avoid goal orientation.

The results of a cluster analysis in the present study yielded a four-cluster solution characterized by the following: students in Cluster 1 were classified as learning oriented,

students in Cluster 2 were classified as performance oriented self-handicappers, students in Cluster 3 were classified as undifferentiated, and students in Cluster 4 were classified as performance-avoiders. These clusters were significant predictors of the following self-regulated learning strategies: self-evaluation, record keeping and monitoring, environmental structuring, and seeking assistance from teachers.

This finding demonstrates that self-regulated learning strategy use may be affected by motivation goal orientation. With the exception of seeking social assistance from teachers, the remaining self-regulated learning strategies listed here were given a mean of 1.26 or below, indicating that they were not used frequently. While some of the more frequently used strategies overall may be used by students from each of the four clusters, it may be that whether these less frequently used strategies are used is mediated by the motivation goal orientation of the learner.

Learning Context

Results of observation notes indicated that there were distinct differences between the two classrooms observed on the basis of mastery goal orientation. Using a framework posited by Ames (1992), these differences were observed with regards to the tasks, authority, evaluation and recognition inherent in the two classrooms. Briefly, classroom A was observed to have more of a performance-approach goal orientation, in terms of the tasks, authority, evaluation and recognition. In contrast, classroom B was observed to have more of a task goal orientation. To further substantiate these observations, results of the analyses indicated that students in classroom B perceived their classroom to have a significantly lower performance-approach goal orientation and demonstrated a significantly higher use of the self-regulated learning strategies of goal-setting and

planning, self-evaluation, and seeking social assistance from adults. These findings suggest that while both classrooms were classrooms in a learner-centered school, there were differences regarding the achievement goal orientations that were actually fostered in these classrooms. Further, these observed classroom differences were shown to impact both the achievement goal orientations and self-regulated learning strategies used by the learners.

Additionally, the result of the cluster analysis yielded some differences with regards to the two classrooms observed. Both classrooms A and B had a relatively equal percentage of students in Cluster 1 the learning oriented students, 27% and 30% respectively. This was also the case with Cluster 4 the performance avoiders, which had 23% and 19% of the students from classroom A and classroom B respectively.

However, classroom A, the classroom that was observed to have a more performance-approach goal orientation, had 31% of its students in Cluster 2 the performance oriented self-handicappers, and 19% of its students in Cluster 3, the undifferentiated students. In contrast, classroom B, the classroom that was observed to have more of a task goal orientation, had 16% of its students in Cluster 2, the performance oriented self-handicappers, but had 35% of its students in the undifferentiated category.

While this is purely speculative at this point, as these results need to be investigated further, these results seem to imply that in each classroom, there was a relatively equal percentage of students who were either learning oriented or performance avoiders (Clusters 1 and 4). Perhaps these are more learner or individual difference variables attributable to the learner him/herself.

However, it may be that clusters 2 and 3, performance oriented self-handicappers and the undifferentiated students are more mediated by the classroom context. The classroom classified as having more of a performance-approach orientation seemed to foster a higher percentage of performance oriented self-handicappers and a lower percentage of undifferentiated students. This may be due to the fact that this approach fostered performance goals on the part of the learners.

In contrast, in classroom B, the classroom observed to be more task goal oriented, had a lower percentage of students who were performance oriented. However, this classroom also had the highest percentage of students who were in the undifferentiated cluster. Perhaps this classroom was more likely to foster an undifferentiated goal orientation for the students who weren't self-regulated enough to succeed in this environment. In other words, it may be that the students falling into this cluster needed more assistance in developing a mastery goal orientation to succeed in this environment. This speculation will be explored further, using a path analysis.

Limitations of the Study

The present study has several limitations. First, at the point at which the data was collected for the study, Celebration School was in its first year. Therefor, since the time at which this study was conducted, the learning context may have undergone substantial change. Second, no achievement data was collected, and therefor we are unable to look at the relationships of self-regulated learning, and motivation goal orientation on actual achievement in this learner-centered context. Third, the sample was a somewhat diverse middle-class sample. Thus extreme caution must be used in generalizing these findings to

other populations. Further, the authors feel that due to the unique characteristics of the Celebration School, generalizations should be made with extreme caution.

Fourth, the study was conducted over a period of two weeks. It is likely that a more intense study would yield a richer investigation into these complex issues. Finally, the data collected was more exploratory in nature, therefor causation should not be inferred. Further research investigating the issues elucidated by the present study through a more intensive investigation using additional analyses to further investigate the complex interrelationships of these variables is presently underway.

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